NewsRelease

National Aeronautics and
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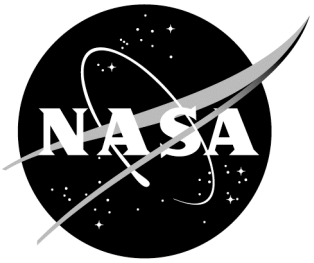

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NASA Langley Forecast: Upcoming stories

NASA considers revolutionary aerospace concepts: A space-based framework for the human exploration and settlement of the solar system, a mission to search for life in the deep oceans of Jupiter's moon Europa, personal air vehicles that can take off from your own driveway, a comet asteroid detection and protection system for Earth -- these are only a few of the revolutionary systems concepts that NASA is exploring to enable future aerospace missions. NASA's Revolutionary Aerospace Systems Concepts (RASC) Program identifies long term strategies and investments that can enable a broad spectrum of future NASA missions.
For more information, call Ivelisse Gilman at 757/864-5036 or email i.gilman@larc.nasa.gov

Working to give pilots clear skies all the time: NASA researchers are developing a revolutionary cockpit technology that will help pilots avoid deadly accidents caused by poor visibility. The NASA 757 Airborne Research Integrated Experiments System (ARIES) aircraft, equipped with futuristic, three-dimensional computer displays, tested "Synthetic Vision" over the Rocky Mountains not far from Vail, Colo. During three weeks of flights, pilots from NASA, Boeing, the Federal Aviation Administration and major airlines evaluated various cockpit display concepts in a real-life, terrain-challenged environment to help determine which configurations will be most effective in preventing accidents. Video, photographs and interviews are available.
For more information, call Kathy Barnstorff 757/864-9886 or email k.a.barnstorff@larc.nasa.gov

Toward a cheaper ticket to the planets: NASA is developing new technologies for future robotic and human exploration of the planets. Aeroassist technologies use aerodynamic forces during atmospheric flight to manage and control the velocity of a spacecraft. Using aerocapture, for example, a vehicle approaching a planet is "captured" into orbit in one pass through the atmosphere, without the use of on-board propulsion. This saves mass, allowing a greater scientific payload to be delivered to the planet, and a smaller, cheaper launch vehicle to be used. Another important benefit of aerocapture is that the vehicle reaches the science orbit quickly, enabling a timely start of the science phase of the mission.
For more information, call Ivelisse Gilman at 757/864-5036 or email i.gilman@larc.nasa.gov

Fly-back boosters being studied for next launch system: NASA researchers are taking a detailed look at novel launch configurations as part of the agency's Space Launch Initiative (SLI). One concept features a fully reusable, two-stage vehicle with a winged first stage booster. After launch, the winged booster would separate -- at a predetermined altitude -- from the main vehicle and fly back to the launch site for reuse. The winged booster would operate much like an airplane, except it will be rocket-piloted from the ground. Long before the first liftoff, researchers must thoroughly understand the intricacies of two winged vehicles separating from

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each other at high speed and at high temperature conditions -- in a safe and efficient manner. To this end, teams from NASA's Langley Research Center in Hampton, Va.; Johnson Space Center in Houston, Texas; and Marshall Space Flight Center, Huntsville, Ala., are taking the first steps toward understanding the fundamental physics of multiple wing-body separation through computer analyses and wind tunnel testing.
For more information, call Keith Henry at 757/864-6120 or email h.k.henry@larc.nasa.gov

Futuristic high-speed aircraft research funded: Even the fastest aerospaceplane of the future must behave itself at takeoff, landing and at other low-speed flight conditions. That's why NASA Langley has turned to several small companies for help – most recently, Accurate Automation, Chattanooga, Tenn. The company will conduct low-speed flight tests to refine performance and stability and control for one of the space agency's hypersonic concepts of the future. These half-airplane, half-spaceplane concepts will be shaped to go fast – five times the speed of sound or more – so flying them at low speeds presents a formidable challenge. The company has been awarded an initial $70,000, with an option for $600,000 more, to accelerate its work on advanced flight controls. The new work will test a control system that adapts to its environment through use of computer-based neural networks. Flight tests will be conducted with a 12-foot unpiloted research vehicle the approximate size and shape of the Agency's X-43A research vehicle.
For more information, call Keith Henry at 757/864-6120 or email h.k.henry@larc.nasa.gov

Speaker series:

January 8 - How well did the Wright Brothers"flyer" fly? Presented by Colin Britcher, Old Dominion University. An analysis of the flight performance of the Wright 1903 'Flyer' will be presented, based on new aerodynamic and propeller data, together with accepted historical data for the engine, weather conditions, weights and dimensions. It has been found that the flight performance was extremely marginal, that the 'Flyer' may have been essentially limited to operation in "ground effect," and that take-off may have been impractical without a headwind. This analysis underscores the Wright Brothers prowess at systems integration, which resulted in their successful first flight with little margin for error.
For more information, call Kimberly W. Land at 757/864-9885 or email k.w.land@larc.nasa.gov

February 5 - It's a gas: understanding this source of heat, light and power. Presented by Stephen B. Pope, Cornell University. Since the industrial revolution and before, combustion has been used as a source of heat, light and power. Engineers have been successful in increasing the efficiency of combustion devices while reducing the levels of pollutant emissions. These advances have been hard won, however, and depended in large part on experience versus scientific study. Pope will describe progress made in the development of computational approaches to understanding combustion, which is facilitating the design, optimization and control of combustion devices.
For more information, call Kimberly W. Land at 757/864-9885 or email k.w.land@larc.nasa.gov

March 5 - Mars Odyssey. Presented by David Spenser, Mars Odyssey Project Manager, Jet Propulsion Laboratory, Pasadena, Calif.
For more information, call Kimberly W. Land at 757/864-9885 or email k.w.land@larc.nasa.gov

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